

## Taxonomy of Hawaiian *Chrysopa* (Neuroptera: Chrysopidae)

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The status of the Hawaiian species of *Chrysopa* needs clarification. Zimmerman (1957) listed two species; a third has recently been taken on Kure, Laysan, and Midway Islands. Correct names have not previously been applied to any of these in literature dealing with the Hawaiian fauna. A. Suehiro, Bishop Museum and G. D. Butler, University of Arizona, have kindly lent material for study.

### *Chrysopa basalis* Walker.

*Chrysopa basalis* Walker, 1853, CAT. NEUROPT. BRIT. MUS. 2:239 (Ryukyu Is., type in Brit. Mus.).—Adams, 1959, B. P. BISHOP MUS., INS. MICRONESIA 8 (2):24–27, figs. 4c, 5, 6.

*Chrysopa microphya* McLachlan, 1883, ANN. MAG. NAT. HIST. V, 12:300.—Zimmerman, 1957, INSECTS OF HAWAII 6:92.

This is a widespread Pacific species. Hawaiian material lacks the black scape stripe present in other Polynesian populations. Geographic variation in genitalia is described by Adams (1959). This species may readily be differentiated from *C. carnea* and *C. comanche* by the convex anterior margin of fore wing, inner gradate series converging upon Rs, and fusion of Sc and R in the hind wing.

### *Chrysopa comanche* Banks.

*Chrysopa comanche* Banks, 1938, CANAD. ENT. 70:119–120 (type: M.C.Z. No. 23181, female, Laredo, Texas).

*Chrysopa sperryae* Banks, 1943, PSYCHE 50:74–75.—*C. comanche*, Adams, 1956, PSYCHE 63:45 (Lectotype female: M.C.Z. No. 25753, Riverside, California, Sept. 7, 1940, G. H. and J. L. Sperry).

[not] *Chrysopa lanata* Banks, 1910, PROC. ENT. SOC. WASH. 12:154 (type: M.C.Z. no. 11987, male, Mendoza, Argentina).—Zimmerman, 1957, INSECTS OF HAWAII 6:90–91.

Zimmerman (1957) was correct in suspecting the accuracy of Banks' identification of this species. *C. comanche* and *C. lanata* are difficult to distinguish on the basis of external characters. The mediuncus of *coman-*

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*che* (fig. 1, *c*) is narrow, downcurved with a deflexed, chisel-shaped apex (less curved, and ligulate in *lanata*, fig. 1, *d*). The setae on the membranous fold (or pocket, if inverted) below the mediuncus are longer in *comanche*. In both there is a median field of small tubercles, each bearing a single central orifice and several short, conical spines (fig. 1, *e*). These tubercles probably are involved in scent production; similar structures are common in male *Chrysopa*.

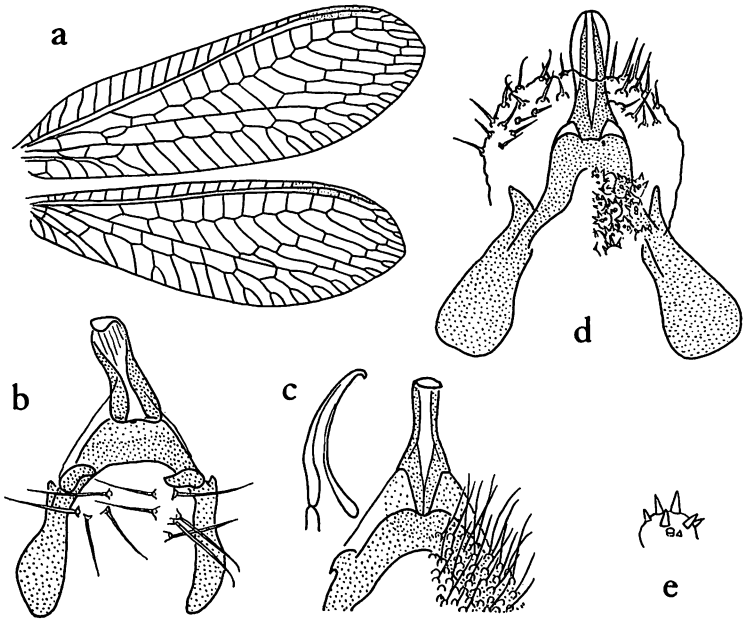


FIGURE 1.—*a, b*, *Chrysopa carnea*: *a*, wings (Glendale, Calif.); *b*, gonarcus and mediuncus, posterior view (Laysan I.). *c*, *C. comanche*, mediuncus and portion of gonarcus, posterior and lateral views (Oahu). *d, e*, *C. lanata*: *d*, mediuncus and gonarcus, posterior view, scent tubercles omitted on left side (Cuba); *e*, scent tubercle enlarged, showing orifice.

While it is possible that both species are present in Hawaii, all specimens I have seen, including Banks' material at the Museum of Comparative Zoölogy, Harvard, are *comanche*. *C. comanche* is common in the southwestern United States and northern Mexico. *C. lanata* occurs from Argentina and Chile north to Florida and South Carolina; it appears to be a synonym of *C. externa* Hagen (sensu Banks 1938), the nomenclatorial status of which is at present unsettled.

***Chrysopa carnea* Stephens (fig. 1).**

*Chrysopa carnea* Stephens, 1836, ILLUS. BRIT. ENT., MAND., 6:103 (Type: Brit. Mus.).

*Chrysopa plorabunda* Fitch, 1956, FIRST REPT. INS. N.Y. :88 (type: U.S.N.M. no 61416, labeled "Fitch's Collection—8158—*Chrysopa plorabunda*. Illinois." Head and abdomen missing. *C. carnea*, Tjeder, 1961, OPUSC. ENTOM. 25:148—[not] *Chrysopa lanata*, Suehiro, 1960, PROC. HAW. ENT. SOC. 17:293; Butler, 1961, *ibid.* 17:383.

Similar to *C. comanche*, wings broader. Apex of hind wing (fig. 1, a) blunt, posterior margin somewhat rounded. In *comanche*, the hind wing apex is acute, and the posterior margin is straighter (Zimmerman, 1957, fig. 48). Pronotal and alar setae black (usually paler in *comanche*). The genae of both species are usually red suffused, but *carnea* has in addition a black genal stripe. The genitalia are externally similar to those of *comanche* (Zimmerman, 1957, fig. 52), but the mediuncus is shorter, straight, with abruptly downcurled apex. Setae below the mediuncus are sparse, and the orifice-bearing tubercles are absent.

Laysan I. and Kure I., Sept. 1961, G. D. Butler (adults and larvae). Midway Is., Sand I., light trap, Aug. 12, 1956, C. F. Clagg.

*C. carnea* is widespread in the Northern Hemisphere of both the Old and New Worlds, but has not previously been recorded from Oceania. The records of *C. lanata* from Midway (Suehiro, 1960) and from Laysan (Butler, 1961) pertain to this species.

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